3. Most of the lines are slightly widened.
4. The wings of diffuse lines are greatly reduced.
5. In agreement with HALM, most of the lines are shifted toward the red.
6. The amount of the shift varies for different lines of the same element.
7. The lines of the ultra-violet cyanogen fluting are not shifted.

In general, while the results so far obtained point to increased effective pressure near the limb (HALM's explanation) as the probable cause of the line-shifts, judgment is reserved until the completion of laboratory experiments now in progress.

September, 1907. GEORGE E. HALE, and WALTER S. ADAMS.

PRELIMINARY PHOTOGRAPHIC MAP OF THE SUN-SPOT SPECTRUM.

A photographic map, extending from λ 4600 to λ 7200, and consisting of 26 sections of 100 Angströms each, has recently been made by Mr. ELLERMAN from the Mt. Wilson negatives of sun-spot spectra. The original negatives were made with the Littrow-grating spectrograph, of eighteen feet focal length, used with the Snow telescope. Each section of the spot spectrum, after being enlarged on a plate moving in the direction of the lines (by the pendulum process frequently employed for widening stellar spectra), is printed alongside the corresponding region of the normal solar spectrum. An approximate scale of wave-lengths, merely for the identification of lines, and not for the determination of their positions, also appears on each section. It is expected that a more perfect map can be issued later. This is intended to supply the immediate needs of visual observers of spot spectra, and has been placed in the hands of those who are taking part in the work set on foot by the International Union for Co-operation in Solar Research.

GEORGE E. HALE.

September, 1907.

SIX STARS WHOSE RADIAL VELOCITIES VARY.

The following stars have been shown to have variable radial velocities, by photographs taken with the Mills spectrograph at Mt. Hamilton. The approximate range of speed observed

is given in the second column, and the names of the discoverers in the third:—

Star.	Observed Range.		Observed by
o Tauri	— 15 to	— 24^{km}	MOORE.
f Tauri	+ 9	+ 27	MOORE.
η Camelopardalis	+ 22	— 40	MOORE.
A Boötis	— 11	— 40	MOORE.
β Coronæ	— 15	— 33	MOORE.
ξ Cygni	— 19.6	— 24.1	CAMPBELL.

W. W. CAMPBELL,
J. H. MOORE.

TWO STARS WHOSE RADIAL VELOCITIES ARE VARIABLE.

Professor WRIGHT, formerly in charge of the D. O. Mills Expedition to the Southern Hemisphere, has found from their variable velocities that the following stars are spectroscopic binaries:—

x Carinæ, with observed speed lying between + 3.3^{km} and + 17.4^{km} per second.

ι Gruis, with observed speed lying between — 2.3^{km} and — 18.8^{km} per second.

The photographs upon which these discoveries were based were taken at Santiago, Chile, by Messrs. WRIGHT and PALMER in 1904-1905, and by Dr. CURTIS in 1906-1907.

W. W. CAMPBELL.

NOTE ON THE PUBLICATIONS OF THE LICK OBSERVATORY.

In the past years six quarto bound volumes of the *Publications* of the Lick Observatory have been printed and distributed to our correspondents.

Volume VII of the *Publications* will contain articles written by members of the Berkeley Astronomical Department. Parts 1, 2, and 3, relating to a short method of determining orbits, were printed in 1902. Only a few copies were mailed, to those who were especially interested in the subject, and the remainder of the edition was held with the expectation that the succeeding parts of the volume would be published soon and be included in the bound volume. Delay in completing the volume makes it desirable that these parts should be distributed unbound in the near future, following the completion of Parts 4 and 5, now ready to go to press.